# Massachusetts Estuaries Project
## Restoring the Estuaries of Southeastern Massachusetts

Massachusetts Department of ENVIRONMENTAL PROTECTION

# TOTAL MAXIMUM DAILY LOADS (TMDLs)

## TMDL basics

**What is a TMDL?**
TMDL stands for Total Maximum Daily Load. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can accept and still meet the state's Water Quality Standards for public health and healthy ecosystems. The federal Clean Water Act requires all states to identify waterbodies that do not meet state standards and develop TMDLs for them.

Massachusetts sets statewide Water Quality Standards for a variety of "uses" such as drinking water supplies, fishing, recreational swimming and boating, and healthy ecosystems for plants and animals. Clean water is vital to human health and recreation, and TMDLs are a critical step in ensuring that degraded waters are restored and protected so that all citizens enjoy a clean and healthy environment.

A TMDL is the sum of loads that are allowable from all contributing point and nonpoint sources of pollution. Point sources are primarily wastewater treatment plants that discharge to surface waters or groundwater. Nonpoint sources include septic systems, stormwater discharges via runoff over the land surface, and fertilizer runoff from lawns and golf courses.

**Why do we need TMDLs for estuaries?**
Most southeastern Massachusetts estuaries are being impacted by excessive loads of nitrogen. Water quality is getting worse, and many estuaries do not meet the Massachusetts Water Quality Standards. Rapid population growth in the area has resulted in more nitrogen than estuaries can accept, causing poor water quality. Resulting problems include

- Loss of eelgrass beds
- Algae blooms, unpleasant odors, and scum
- Fish kills
- Reductions in important animal life on the ocean bottom, such as lobster, shrimp, scallops and mussels.

The Massachusetts Estuaries Project (MEP) determines which estuaries are being impacted by excessive nitrogen and identifies the sources of nitrogen pollution, so that communities have the scientific basis for common sense, cost-effective decisions on how to protect and restore their estuaries. TMDLs will guide the changes needed to restore water quality in these waterbodies.

**How are TMDLs calculated for MEP Estuaries?**
Developing a nitrogen TMDL for an MEP estuary requires delineating watersheds, analyzing nitrogen sources, and collecting comprehensive water quality and land use data. This information comes from communities, regional planning groups, and state and local monitoring programs.

The MEP integrates the data on water quality, nutrient loading, and hydrodynamics to model the impact of nitrogen loads on estuaries. The MEP models can be used to illustrate how changes in land use will affect the nutrient load and water quality in estuaries. For example, the model can illustrate how much the nitrogen load will drop if flows from on-site wastewater systems decrease or if fertilizer use is reduced.

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SMAST, the School for Marine Science and Technology at UMass Dartmouth, prepares a Technical Report for each estuary. The Technical Report forms the basis of the TMDL by documenting the MEP model results and identifying potential nitrogen reduction approaches. To determine the most cost-effective solutions, communities may request modeling of additional nitrogen reduction approaches for a small additional cost.

**Is a TMDL a number?**
Yes. The Technical Report establishes a protective nitrogen threshold for each estuary. This establishes the maximum amount of nitrogen allowable in the watershed on an annual basis in order to maintain the health of the estuary. The TMDL number states the maximum nitrogen load in kilograms per day allowable from different sources, including point sources, nonpoint sources, and natural sources.

# Who is Involved?

**Who develops the TMDL and TMDL Report?**
DEP establishes the TMDL number and writes the TMDL Report that summarizes information from the MEP Technical Report, documents the basis for the TMDL number, and allocates the allowable loadings to point and nonpoint sources of nitrogen.

**What is the review and approval process?**
DEP begins preparing the draft TMDL Report after the draft MEP Technical Report has been completed. The goal is to have a draft TMDL Report available for public review approximately 30-60 days after the final Technical Report is completed. However, the exact timeline depends on site-specific issues that need to be addressed.

DEP makes the draft TMDL Report available for public review in advance of a local public meeting. At the meeting, MEP staff explain the Technical Report, the TMDL process, and the TMDL recommendations, and receive comments from local officials and citizens. DEP generally accepts written comments on the TMDL for 2-4 weeks after the meeting.

DEP then considers all comments and responds to them in writing, finalizes the TMDL Report, and submits it to EPA for formal approval. EPA reviews the TMDL Report, including public comments, and approves or denies it, typically within 30-60 days.

**Do communities have input into the Technical Report and TMDL? Do they get to approve them?**
Communities provide essential input to the Technical Report on land use, water quality, and other important local factors. The nitrogen thresholds and TMDL figures are science-based calculations driven by statewide Water Quality Standards and the classification of a waterbody for a particular use, and are established by DEP. Once the Technical Report and TMDL are complete, communities decide through Comprehensive Wastewater Management Planning (CWMP) how best to implement the TMDL in order to achieve the desired water quality goals. DEP reviews and approves a community's CWMP, and makes subsequent permitting decisions based on its approved Plan.

# What Happens After the TMDL is Set?

**Can a TMDL be appealed?**
Whenever a TMDL-derived pollutant reduction is incorporated into a federal or state discharge permit, the permit limit may be appealed following the federal or state administrative appeal process. After a final adjudication of the administrative agency appeal, eligible parties may appeal the agency decision to court. TMDLs themselves are not subject to appeal to DEP. Given that TMDLs are a relatively new approach to

regulating pollutant loadings to Massachusetts waters, certain legal implications of appealing the TMDL directly to EPA have not been developed enough to provide definitive guidance.

**What if a TMDL is not achievable?**
DEP and EPA recognize that restoring polluted waters, particularly where nonpoint sources are the primary contributor, is a long-term process. Rather than requiring that Water Quality Standards be met in a fixed time frame, the TMDL process requires communities to develop a plan to restore waterbodies and make progress toward the implementing the plan. This "adaptive management" approach is based on taking action, measuring its impact, and adjusting future steps as necessary. DEP will work with communities on the implementation process to determine what is realistic and achievable.

If a TMDL is not achievable, the federal Clean Water Act has a process for downgrading the classification of a waterbody. EPA's "Use Attainability Analysis" must be used to scientifically demonstrate that a change in the designated use of the waterbody is appropriate. However, this is an extreme measure that is not undertaken until all feasible measures to meet the Water Quality Standards have been exhausted.

**Will a TMDL trigger the need for a state permit?**
This depends on the local situation and the implementation strategy chosen by the community. For example, actions such as building or expanding wastewater treatment facilities will require a permit.

**How will DEP enforce a TMDL?**
DEP prefers to work cooperatively with communities to protect and restore impaired waters. This is especially true when pollution comes from nonpoint sources such as stormwater runoff and on-site wastewater disposal, and where solutions are less straightforward than additional treatment of a point source discharge.

As long as a plan is developed and actions are being taken at a reasonable pace to achieve the goals of the TMDL, DEP will use discretion in taking enforcement steps. However, in the event that reasonable progress is not being made, DEP can take enforcement action through the broad authority granted by the Massachusetts Clean Waters Act, the Massachusetts Water Quality Standards, and through point source discharge permits.

# Resources and Contacts

**To learn more about how your community is involved in the MEP and what you can do to help, contact your local Town Hall.**

- *DEP:* MEP: http://www.mass.gov/dep/smerp/smerp.htm.
  Brian Dudley (508) 956-2753 brian.dudley@state.ma.us

  TMDLs: http://www.mass.gov/dep/brp/wm/tmdls.htm
  Russell Isaac (508) 767-2876 russell.isaac@state.ma.us
- *EPA:* Estuaries: http://www.epa.gov/owow/estuaries/
  TMDLs: http://www.epa.gov/OWOW/tmdl/
- *Cape Cod Commission*: www.capecodcommission.org
- *Buzzard's Bay Project National Estuaries Program:* www.buzzardsbay.org
- *Coalition for Buzzards Bay:* www.savebuzzardsbay.org

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